The Effect of Different Parameters of Cell Seeding Density on the Survival of Bone Marrow Mesenchymal Stem Cells under Oxidative Stress

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BACKGROUND

Optimization of cell seeding density in in vitro cell culture conditions has much more importance in mesenchymal stem cells (MSCs) studies. It is especially important in the extension of in vitro results to in vivo activity. The aim of this study was to evaluate the effect of cellular density on MSCs survivals against oxidative stresses.

METHODS

MSCs were isolated from rat bone marrow and cultured in DMEM-LG and 10% FBS medium. The cells were treated with different concentrations of H_2O_2 for 4 hours, and cells' survival rate was estimated with MTT assay. Then, MSCs were cultured in the same condition with the diverse density of 1000 to 4000 cells/96-well plate and treated with IC50 dose of H_2O_2 for 4 hours. The viability of cells was determined by MTT assay.

RESULTS

IC50 dose for H_2O_2 was determined 0.5 mM. Furthermore, this study demonstrated that higher densities of MSCs significantly increase their survival rate against H_2O_2.

CONCLUSTION

Our study showed that higher cell seeding density can lead to improve MSCs survival against oxidative stress under *in vitro* condition, and this can provide new clue in the cell therapy activities.

KEY WORDS

Oxidative Stress, Survival, Cell Therapy, Bone Marrow Mesenchymal Stem Cell

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